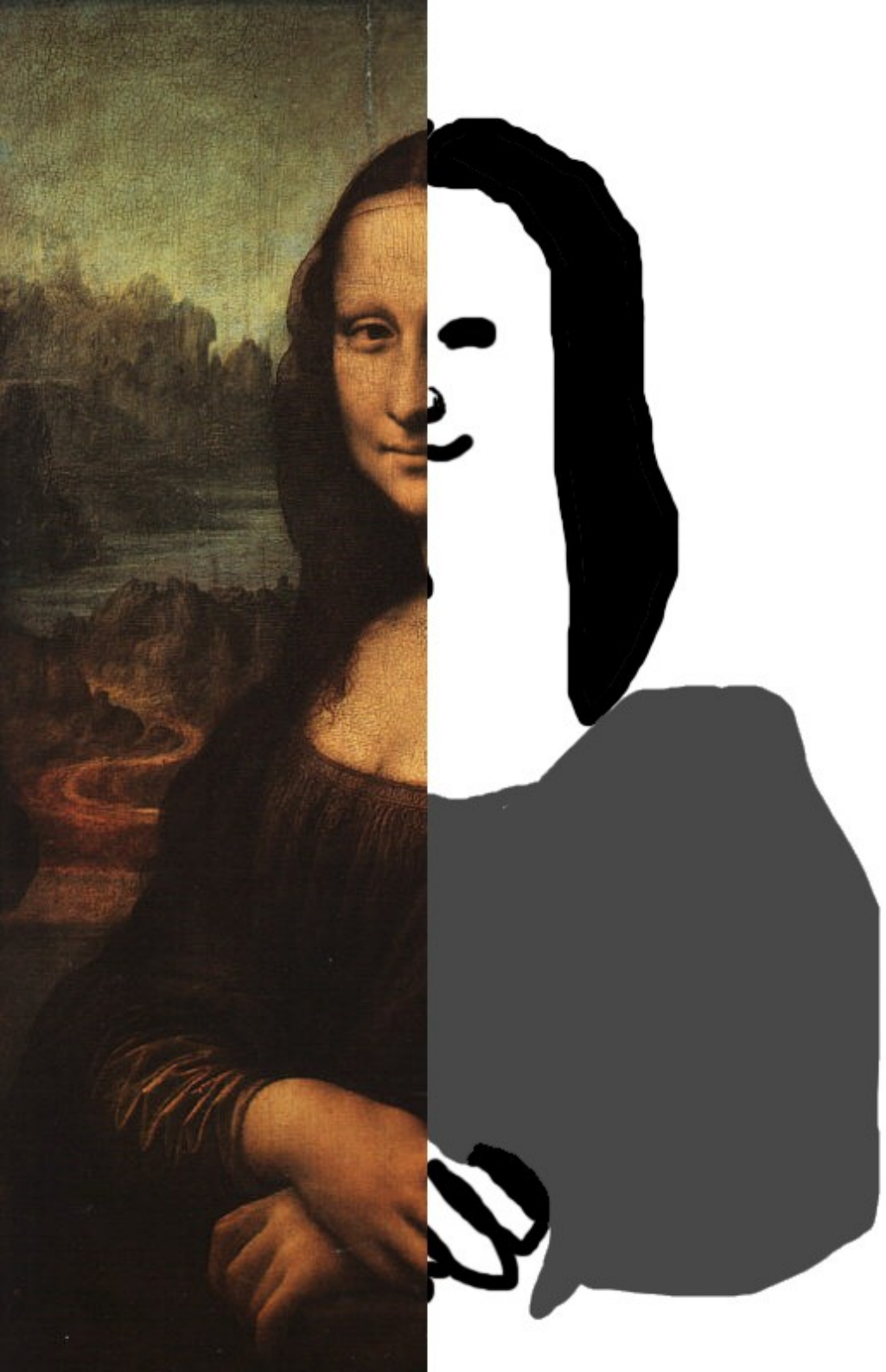

workshops
in creative coding
Theodoros
Papatheodorou

# introduction



## Computer Vision:

A set of algorithms that allow computers to understand images.

# 3D face recognition by machines

# Athens School Of Fine Arts

# interactive projections & computer vision in live performance

# class purpose

- provide a fundamental understanding of code and modern computer literacy.
- introduce you to a range of techniques and practices for creating interactive audiovisual software in openFrameworks/C++
- develop your artistic practice
- assist you in delivering two working software projects

OpenFrameworks

workshops in creative coding
v
programming for artists

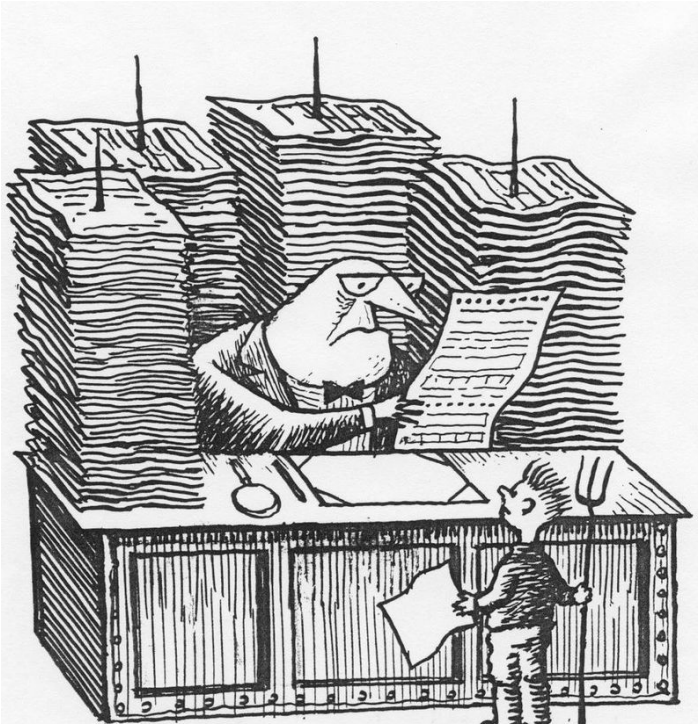
# class outline

- 1st term
  - syllabus
  - final project (video / website / source code)
- 2nd term
  - syllabus (with your input)
  - final project (video / website / source code)

# bureaucratic

- email: t.papatheodorou@gold.ac.uk
- mailing list of MA/MFA: compArts@doc.gold.ac.uk
- mailing list of class: TBC
- class website: gitlab.doc.gold.ac.uk
- absence policy:

- grading: see class website on gitlab.doc.gold.ac.uk



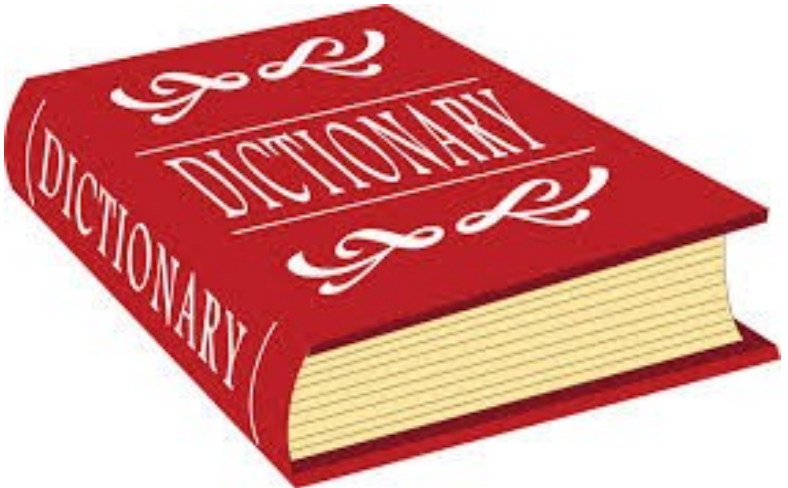
# what is computational art?

“Could the artwork have been made without the use of a computer?”

“Does it take advantage of the computer’s unique capabilities?”

Roger Malina

SIGGRAPH '89, Leonardo Special Edition

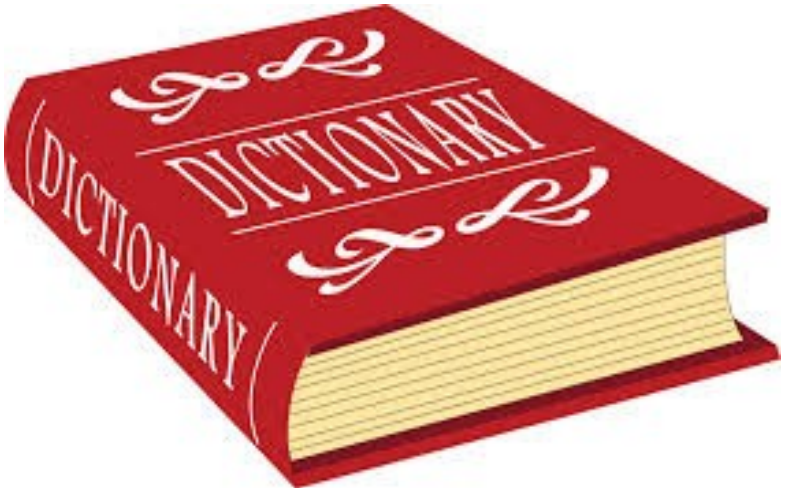


# what is computational art?

“Does your work with the computer affect the direction of your results?”

Aldo Giorgini – 1975

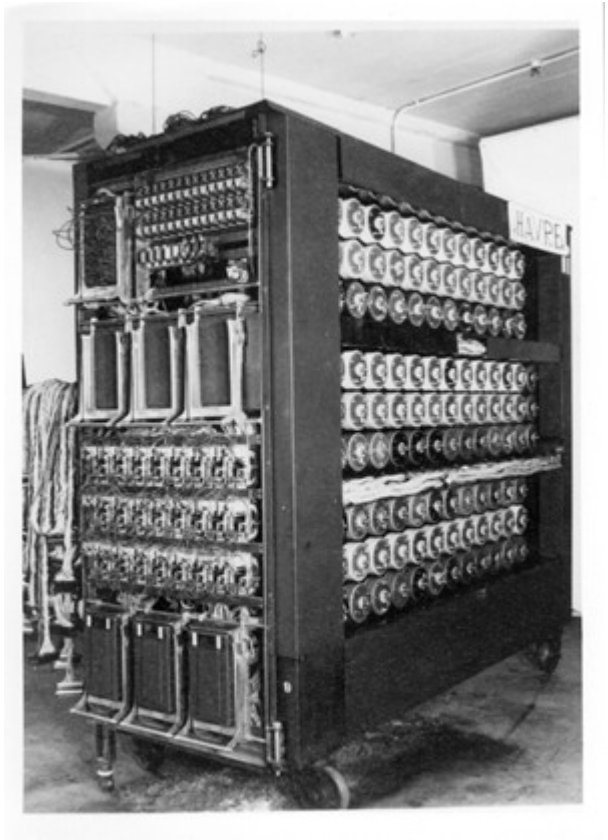
source



# 40s

# code + arts

- programming: a difficult task
- designers + artists have different requirements than engineers and scientists
- C++/Java take years to master



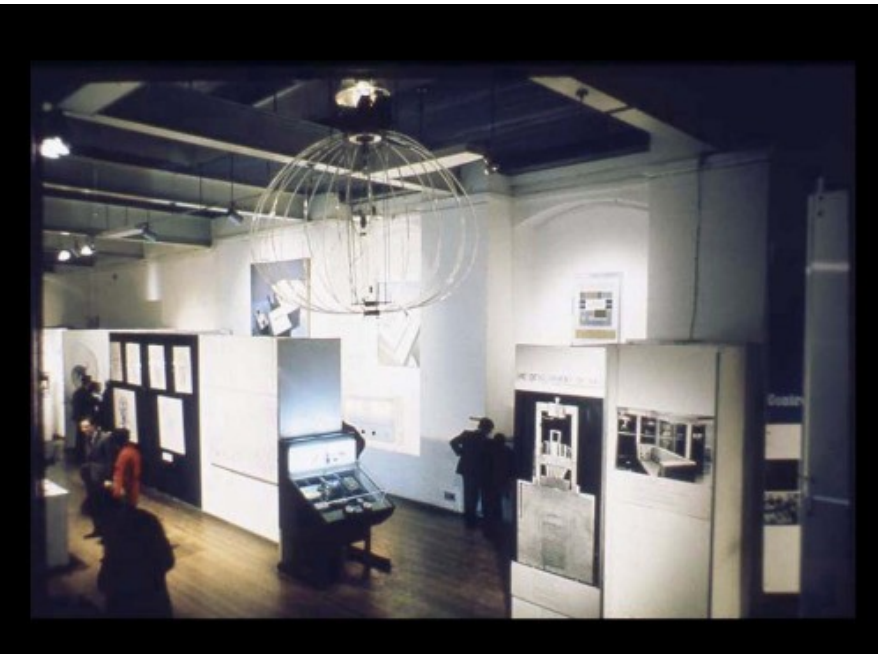
*“The world was at war. Complex calculations had to be done under time pressures not normally felt by mathematicians. It's unlikely that the gave even a passing thought to making computers user-friendly to people with softer styles than theirs.”*

- Seymour Papert

50-60s

# code + arts

- artists experimented with themes related to software and system aesthetics
  - Cybernetic Serendipidy exhibition (ICA, 1968)
  - Hans Haacke's Visitor's Profile (1971)



# Cybernetic Serendipity

## Serendipity

Serendipity

the faculty of making happy chance discoveries by means of control and communication machines both human and electronic

An exhibition

and other serendipitous manifestations

Institute of Contemporary Arts

August 2 – October 20

CYBERNETIC SERENDIPITY LECTURES

Thursday August 8

Tuesday August 13

Thursday August 15

Tuesday August 20

Tuesday August 27

Tuesday September 3

Thursday September 5

Tuesday September 10

Thursday September 12

Thursday September 19

Tuesday September 24

Thursday September 26

Tuesday October 1

Tuesday October 8

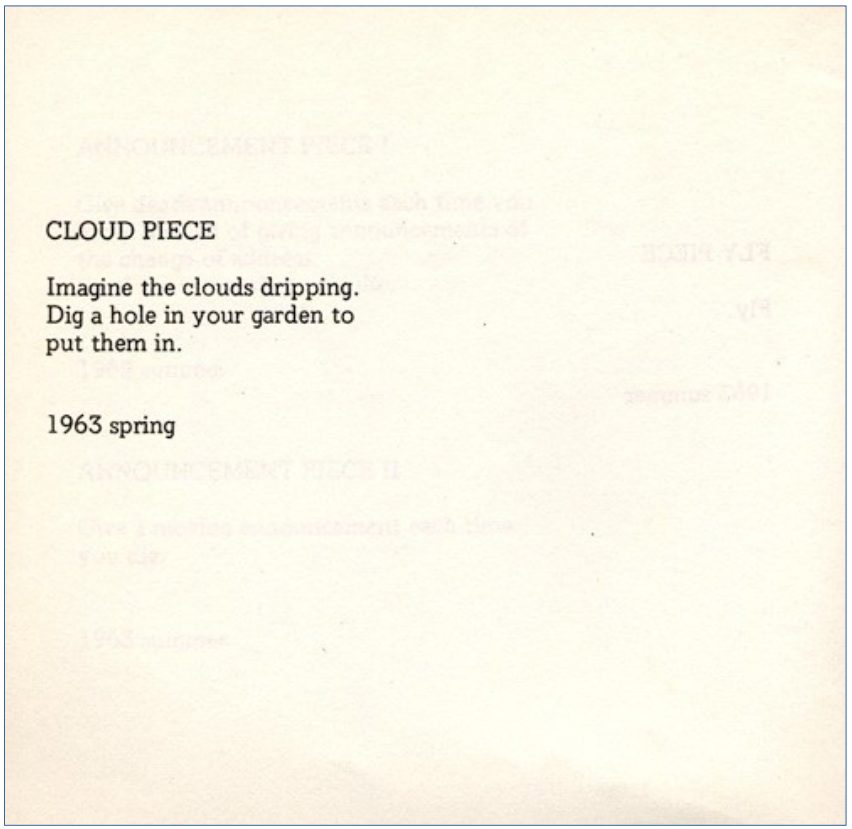
Thursday October 10

Thursday October 17

# 50-60s cont.

# code + arts

- process-based art
  - instructions and diagrams as a form of art

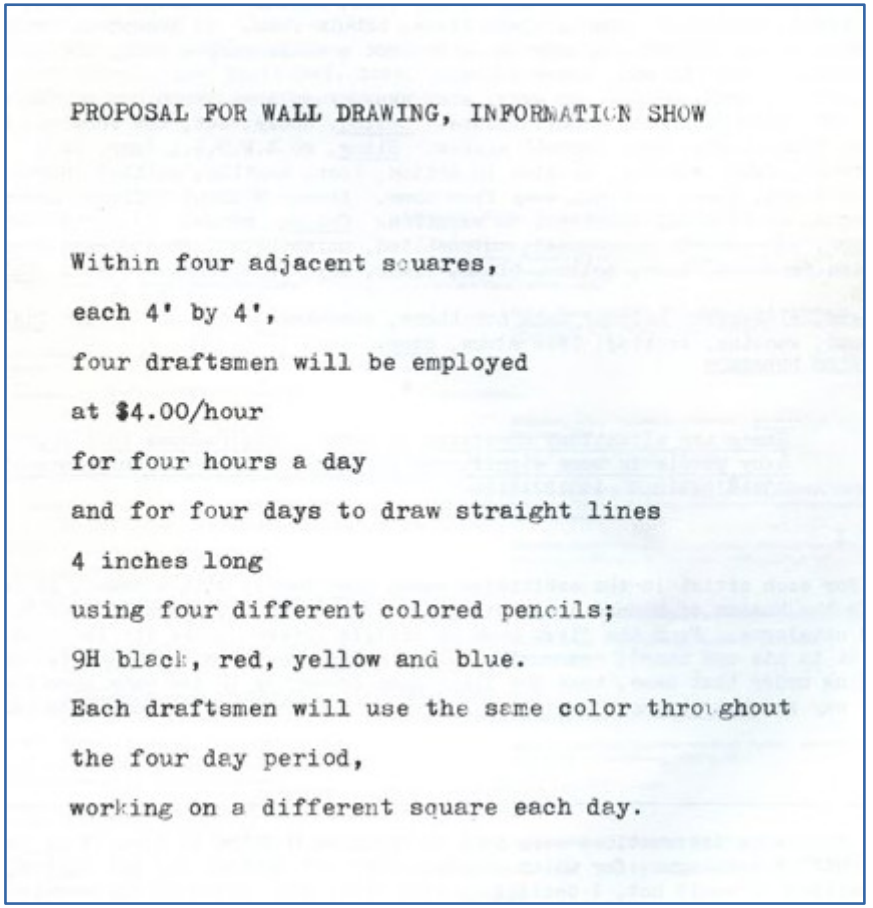


CLOUD PIECE

Imagine the clouds dripping.
Dig a hole in your garden to
put them in.

1963 spring

*Yoko Ono (1963)*



PROPOSAL FOR WALL DRAWING, INFORMATION SHOW

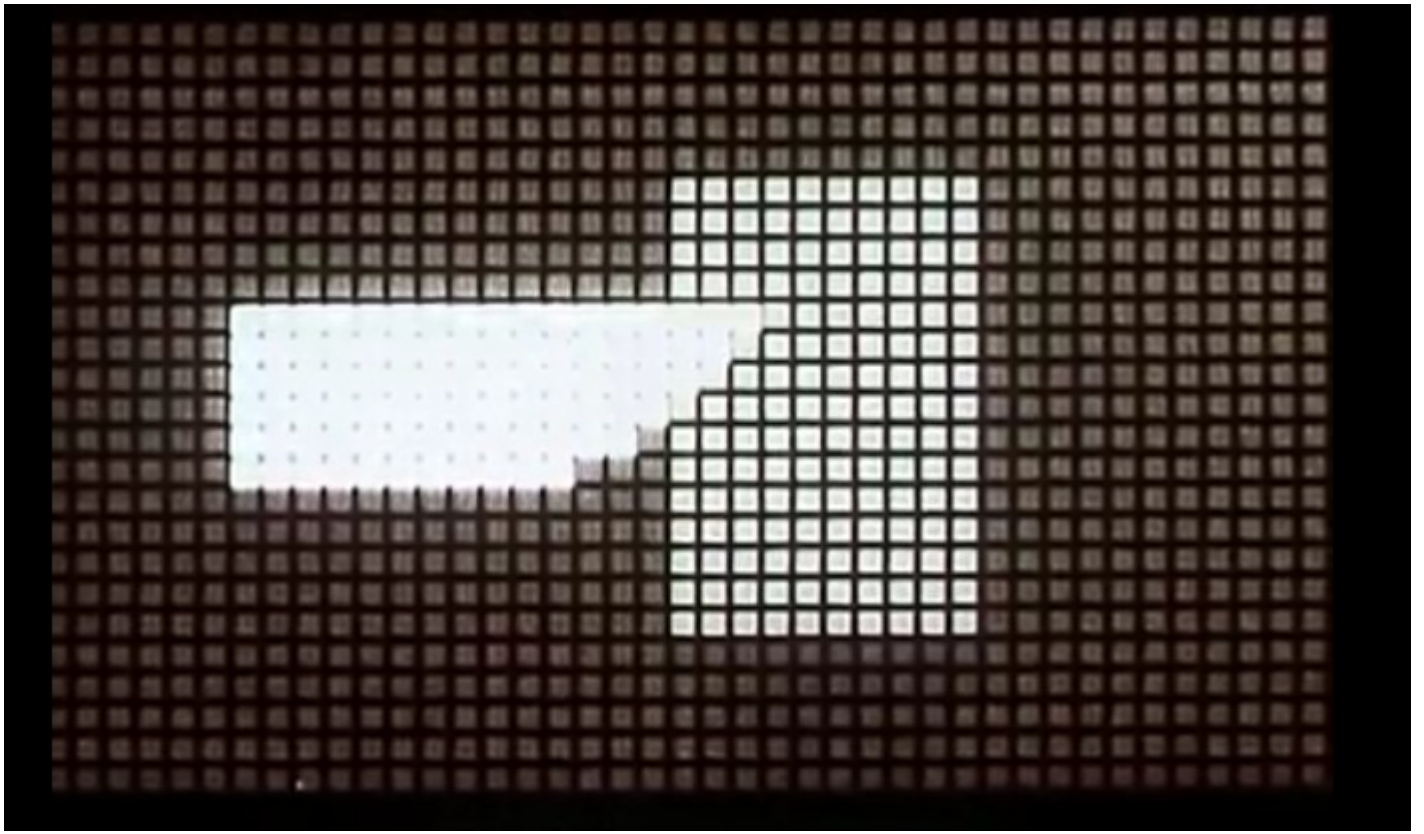
Within four adjacent squares,
each 4' by 4',
four draftsmen will be employed
at $4.00/hour
for four hours a day
and for four days to draw straight lines
4 inches long
using four different colored pencils;
9H black, red, yellow and blue.
Each draftsmen will use the same color throughout
the four day period,
working on a different square each day.

*Sol LeWitt (1970)*

# 50-60s cont.

## meanwhile the engineers...

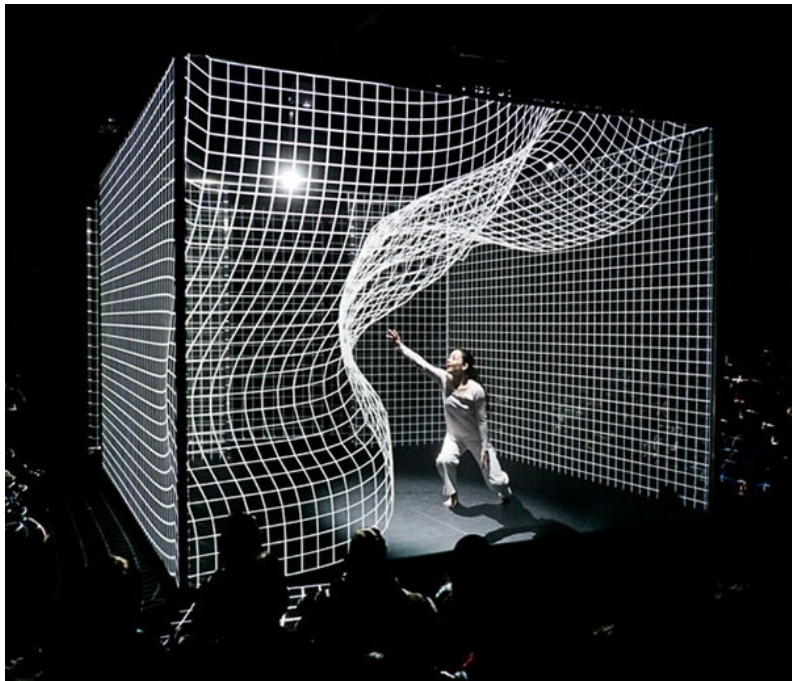
BEFLIX (Bell Labs) – early computer graphics



80s - today

# code + arts

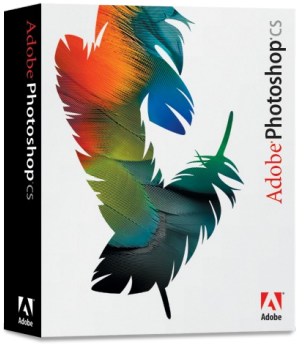
- proliferation of the personal computer
- programming reaches wider audience
- Lingo was developed
  - first language used by designers and artists up to early 90's
- code is used today not just for controlling pixels
  - controls elements of products
  - architecture
  - installation



# why code?

Tradition of artists creating their own tools as old as art itself.

Software revolution and the “Photoshop effect”




From paint to code

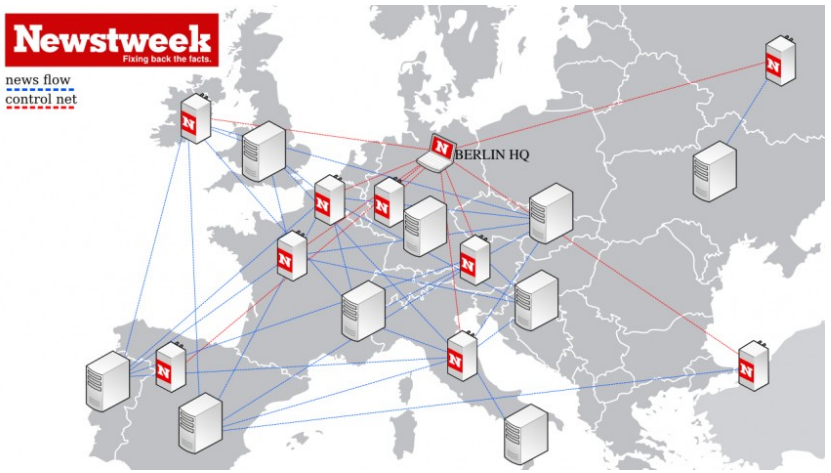
# code + arts

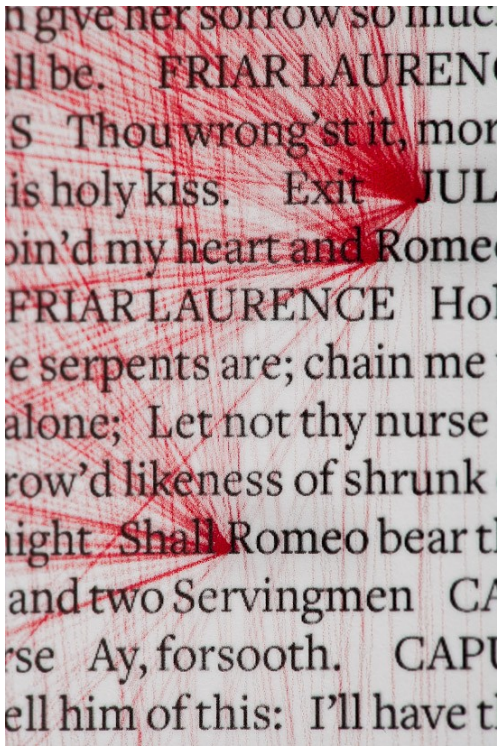
## conclusions

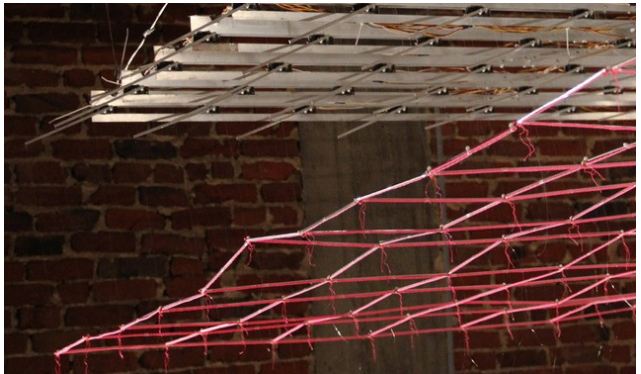
- observer vs. observed
- new modes of expression
- computer more than a projector
- non-linear narrative
- New ways of I/O
- exceed limits of proprietary packages
- gateway to new media
- computer becomes a medium, not a tool

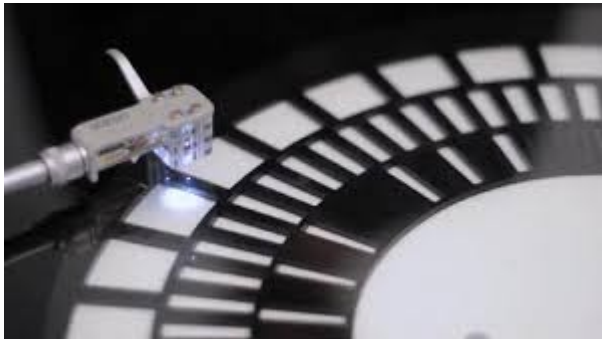
# programming + art

## examples



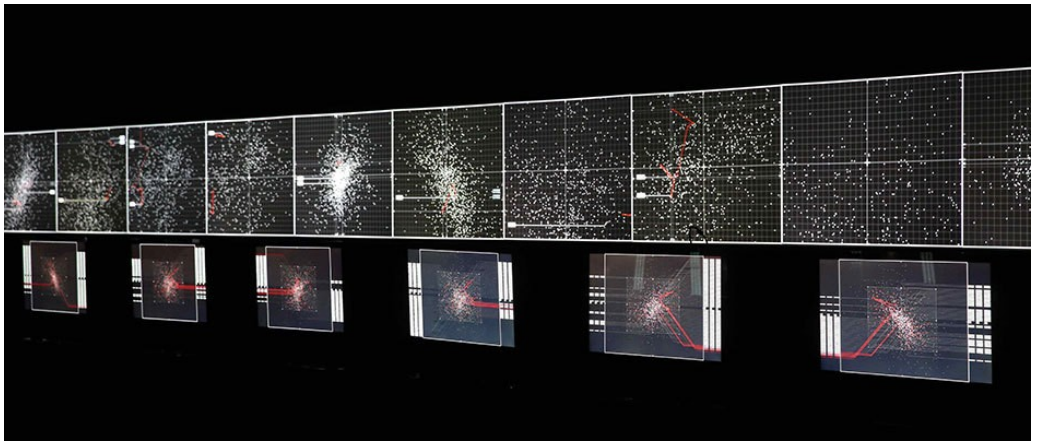



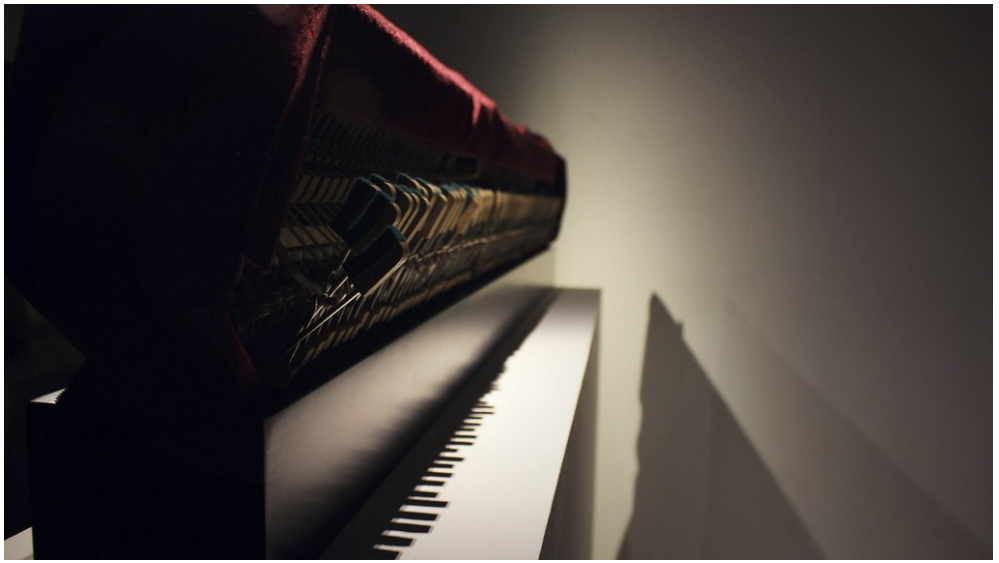





# programming + art

## examples (cont)



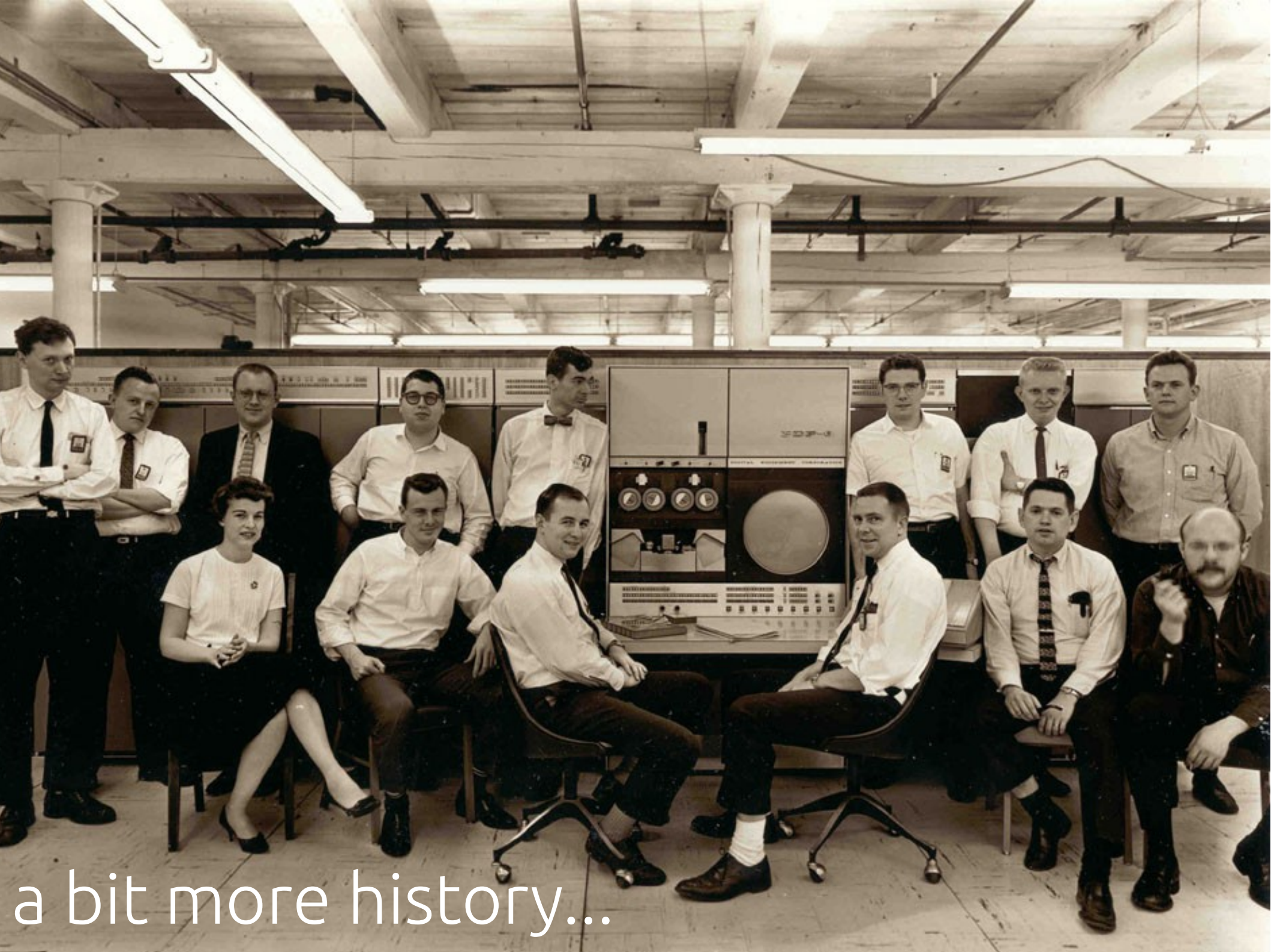


# two volunteers for next time

- presentation of an art piece in 5'
- must be computational art
- among other things you must say:
  - who made it and when?
  - what technology was used?
  - how does it work? (describe its behavior)
  - what did you like in the artwork?
- for inspiration see links on class website

# OpenFrameworks

Free Software
Free Society



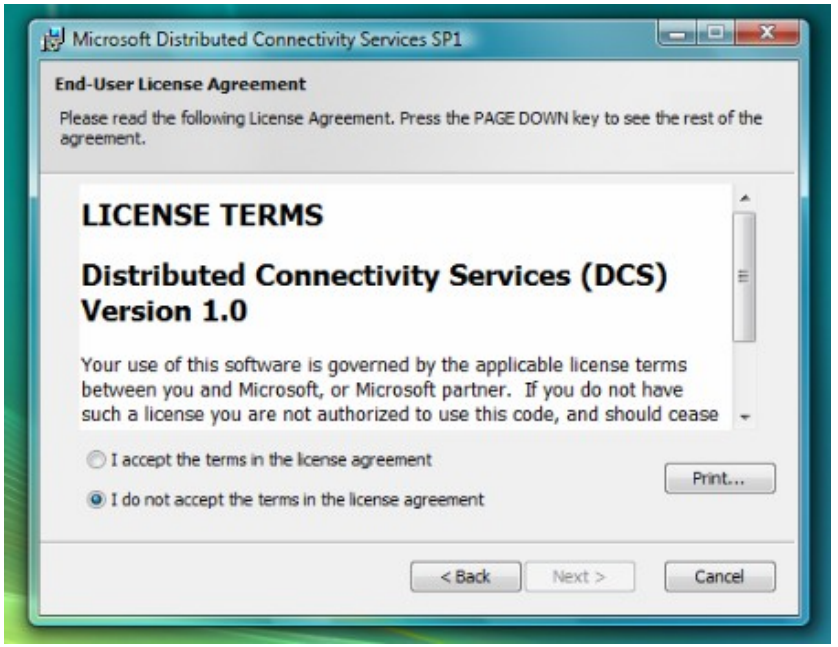
a bit more history...

# ...a bit more history

- Up until the late 70's users were able to study the source code of software, copy it and exchange it with each other
- But things were beginning to change since the end of the 60's:
  - increase in software costs
  - many users were asking for support
  - many users wanted to buy software separately
  - the software industry started competing with the hardware industry

# a change...

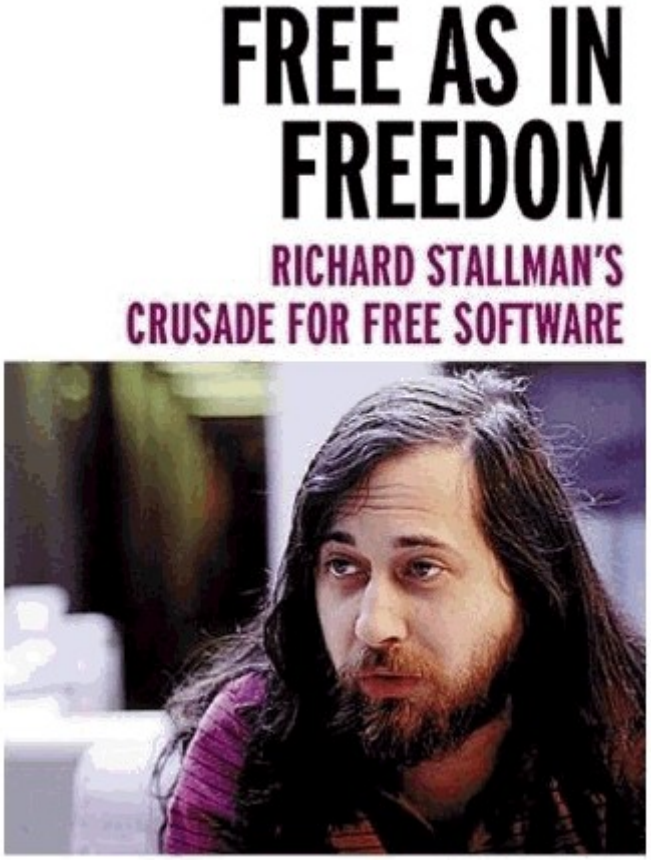
- In the late 70's companies started distributing binary copies of their software
- Laws on intellectual property were extended to software
  - a software was protected just like a song or novel
  - they started selling software licenses and not the actual programs




Richard Stallman

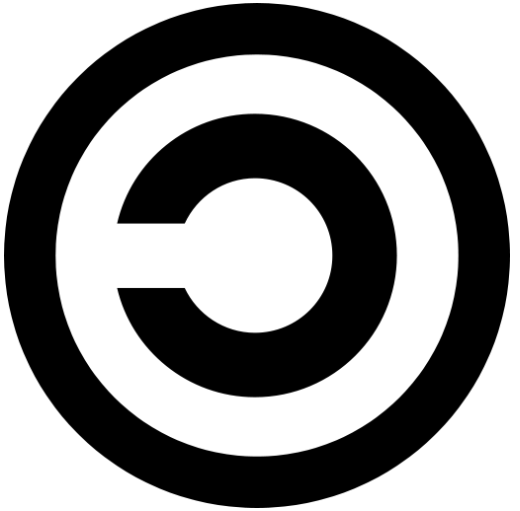
# free software
## the basic freedoms

- Freedom 0: The freedom to run the program, for any purpose
- Freedom 1: The freedom to study how the program works, and change it so it does your computing as you wish. Access to the source code is a precondition for this.
- Freedom 2: The freedom to redistribute copies so you can help your neighbor
- Freedom 3: The freedom to distribute copies of your modified versions to others. By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.

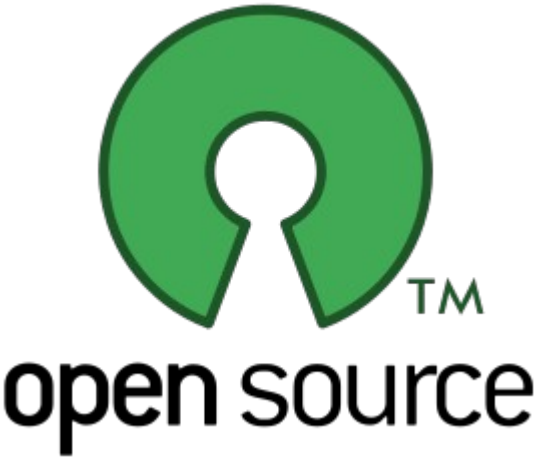


# GNU General Public License

- publishes in 1989 the GPL software license in which apart from the aforementioned freedoms adds an original condition. *Copyleft*
- copyleft grants the freedom to use, modify and redistribute a intellectual creation...
- under the important condition that every copy or modified work will be distributed with the same license (granting the same freedoms)
- It's different from public domain

# free vs. open source




- open source: way of developing software
- free software: social movement

# freedom and free software

- it's not just a good product
- it changes our way of thinking
- it contributes to the creation of a new social language
- new social and practical horizons open
- corporate controller of information (Google, Facebook et al.)

we must control the means of production

# free software for artists

- 3D modelling software (Blender)
- 2D Animation (Ktoon, Synfig, Pencil)
- Video editing (KDEnlive, VirtualDub, Avidemux, Avisynth)
- Video players (VLC)
- Audio editing (Audacity)
- Processing / openFrameworks
- Pure Data / supercollider
- and many more here: http://www.osalt.com/

# your turn

name

studies

relevant experience

interests

why are you here?

programming experience


GitLab